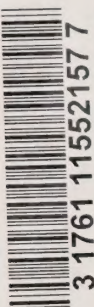


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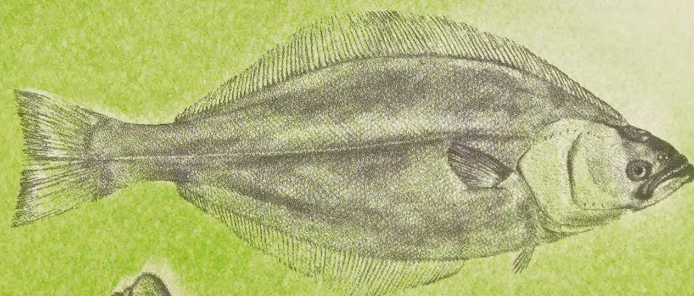
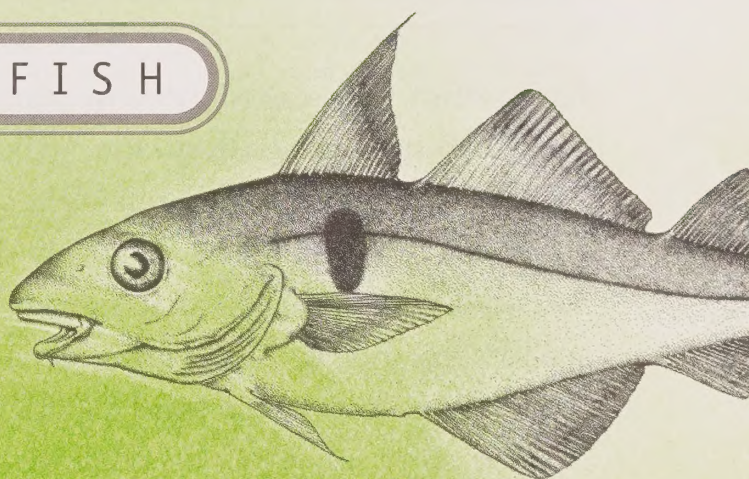
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ATLANTIC GROUND FISH



Canada



Atlantic Groundfish

Groundfish – so-called because they generally feed and dwell near the bottom, the “ground” of the sea – make up about half of Atlantic Canada’s total catch of all saltwater species. The relatively shallow waters of the continental shelf – that submerged shoulder of seabed separating the continental shore from the deep ocean – provide an ideal habitat for fish. Canada’s Atlantic shelf, especially its shallowest portions – the renowned Grand, Georges and other fishing banks – provides some of the richest pastures of the sea for breeding and feeding aquatic life.



Warm waters of the northerly flowing Gulf Stream mingling with the frigid Labrador Current create conditions particularly conducive to sustaining large populations of cod, flatfish, haddock and other groundfish species.

Northwest Atlantic fishing banks are very large – the Grand Banks alone cover 280,000 square kilometres – and extend seaward as much as 500 kilometres from the coast, although most lie within the 200-mile zone set by Canada in 1977 as its exclusive fisheries management area.

Groundfish species in the Northwest Atlantic declined dramatically in the late 1980s and early 1990s, largely because of overfishing. Almost all Canadian fisheries for cod and several other groundfish fisheries on the Atlantic coast were prohibited for several years to allow the stocks to rebuild. By the year 2000, the abundance of most of these species continued to be low in most areas.

Offshore fisheries are conducted mainly by large trawlers (>30 m), as well as small draggers, seiners and longliners. Trawlers, draggers and seiners use bag-like nets (trawls) “dragged” behind them to sweep the seabed waters. Longliners pay out lines of hooked gear.

Much groundfish fishing is also carried on by inshore boats using gear set near or from the shore. Small boats of the inshore fleet use gillnets, trapnets, handlines and longlines to harvest their share of the catch.

In relative order of economic importance, the principal groundfish species are cod, turbot, haddock, small flatfishes (e.g., plaice, flounder), hake, redfish, pollock and halibut. Other groundfish species that are fished commercially include cusk, skate, dogfish and wolffish, commonly called catfish.

Cod (*Gadus morhua*)

Despite the dramatic decline of the 1990s, cod remain the most important groundfish species on the Atlantic coast as in the beginning of the fishery in the early 16th century. In the Northwest Atlantic, cod range from western Greenland south to Cape Hatteras, North Carolina. In each of the various regions of Atlantic Canada, there can be one



Cod

or more identifiable cod population. There are at least a dozen separate stocks, each with its own set of distinctive traits.

The most notable characteristics of cod are their heavy body with three dorsal and two anal fins, an almost square tail and the pale lateral line running along each side of the body from the head to the tail. The large head has a protruding upper jaw and there is a prominent, fleshy 'whisker' or barbel under the lower jaw.

Cod vary in colour from shades of gray, green, brown or red depending on the habitat and, over a period of time, are capable of changing colour to match their surroundings. The back and sides are speckled with many brownish to reddish spots.

Cod feed voraciously on almost all types of sea life. The young feed upon small planktonic animals, small worms and tiny shrimp-like animals. As they grow older, they consume quantities of small crustaceans and molluscs as well as capelin, herring and sand lance. Cod taken in the commercial fishery are mostly between 45 and 80 cm and weigh between 0.8 and 4 kg; however, cod can grow to exceed 20 kg.

Although they usually stay close to the sea bottom, cod may be found anywhere from the surface to depths of well over 500 m. Cod move in schools from deeper to

shallower waters in seasonal cycles thought to be triggered by temperature, food and spawning behaviour.

While they are caught close to the shoreline along the entire Canadian coast, the most productive fishing areas are the offshore banks.

Cod are harvested with longlines, trawls, seines, handlines, jiggers, traps and gillnets.

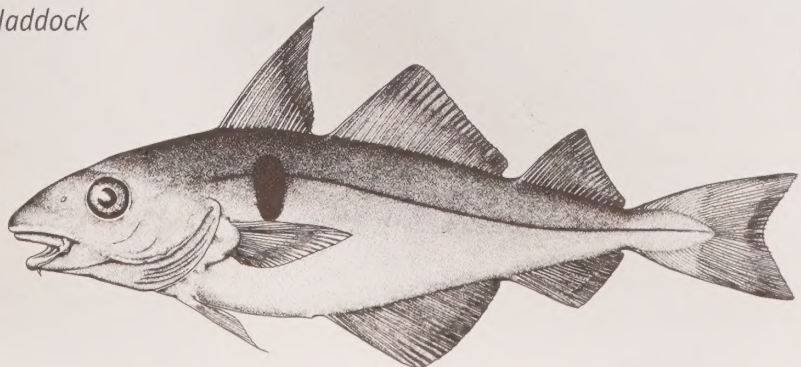
Cod are sold fresh, salted or smoked. The bulk of the catch goes into the production of frozen fillets and frozen fillet blocks used in the production of fish sticks and fish portions.



Haddock (*Melanogrammus aeglefinus*)

Haddock, long familiar to fishermen on both sides of the Atlantic Ocean, belong to the same family as cod and pollock. Among the most popular of the north Atlantic

Haddock



fish species, haddock were once more abundant along Canada's east coast. Intensive fishing in the 1960s, however, greatly reduced the stocks. In the 1990s, most of the remaining fishery was located on the Scotian Shelf, the Bay of Fundy and the Gulf of Maine.

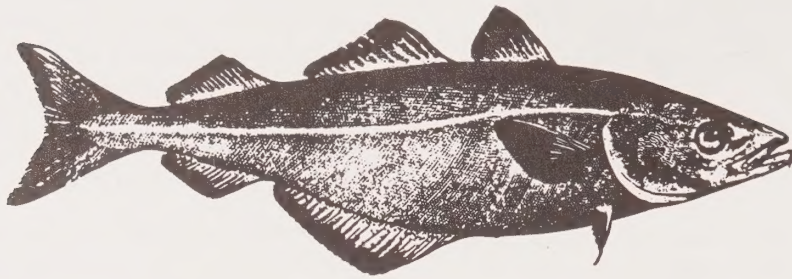
Haddock range from the Strait of Belle Isle to Cape Cod. In Canadian waters, they occur mainly on the continental shelf from the Bay of Fundy to the east coast of Cape Breton, and eastward to the Grand Banks, most commonly in depths of 45 to 240 m.

Haddock are dark purple-gray on the head and back. The lateral line is black, and below it the colour lightens to silver-gray with a slight pink cast. A distinguishing mark is the large, black, thumb-print spot appearing just above each pectoral fin. Fish in the commercial catch are usually between 0.9 to 4 kilograms in weight.

Haddock are caught with otter trawls but other gear such as longlines and gillnets are also used.

These fish are marketed as fresh and frozen fillets. Smaller quantities are sold as fresh and frozen whole fish and as headless split and smoked fish (finnan haddies).





Pollock

Pollock

(*Pollachius virens*)

Pollock are also members of the cod family. For years, these spirited, saltwater fish were unappreciated except by sport fishermen. Now, they are eagerly sought as a commercial species in their own right.

Pollock range from southern Labrador to Cape Cod, but are fished primarily in coastal waters and on the offshore banks of the Scotian Shelf, Bay of Fundy and Gulf of Maine.

Deep-bodied with three dorsal and two anal fins, pollock differ from cod and haddock by having a pointed snout and projecting lower jaw. The back is brownish-green, paling to a yellowish smoky-gray or green on the sides, and the belly is silver-gray. The lateral line, like that of cod, is pale, but there are no spots. Fish in the commercial catch range are usually from 1 to 4 kg in weight.

Pollock are principally caught with otter trawls, although other types of gear such as longlines, handlines and gillnets are also used. Pollock are marketed as Boston bluefish frozen fillets or frozen breaded items such as portions and sticks.



White Hake

(*Urophycis tenuis*)

White hake are somewhat cod-like but have only two, rather than three, dorsal fins, and only one anal fin. The colour varies considerably, with the back usually reddish to muddy brown and the belly pale gray, yellowish or white. They are normally 40 to 100 cm long and are taken by otter trawls, gillnets, longlines and handlines in the southern Gulf of St. Lawrence, and along the eastern Scotian Shelf and western Grand Banks.

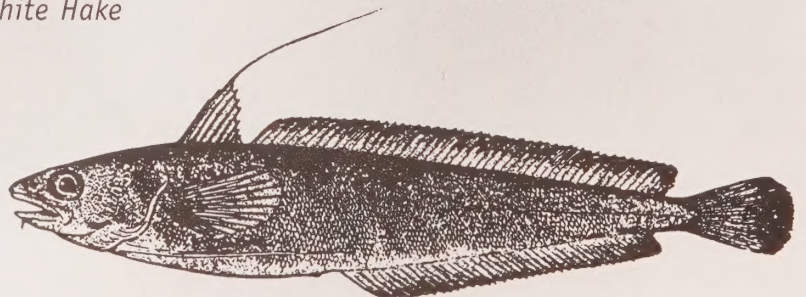


Silver Hake

(*Merluccius bilinearis*)

Silver hake are members of the cod family, but are more slender and have two dorsal fins. They are

White Hake



dark gray with silver underparts. When freshly taken from the water, they are silvery iridescent, but the bright colour soon fades. Fish in the catch range from 20 to 30 cm in length and weigh between 0.1 and 0.3 kg.

Occurring from the Grand Banks to South Carolina, silver hake are mainly found on Georges Bank and on the Nova Scotia Banks, particularly on Browns Bank and the Sable Island Banks in depths of 55 to 275 m. Silver hake are generally found in the warmer waters of the Canadian Atlantic (7 to 10° C).

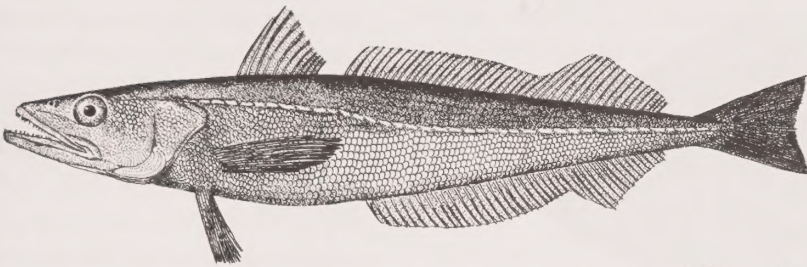
Formerly under-utilized in the Canadian fisheries and harvested mainly by fleets of other nations, silver hake were fished almost exclusively by Canadians using otter trawls in the late 1990s.



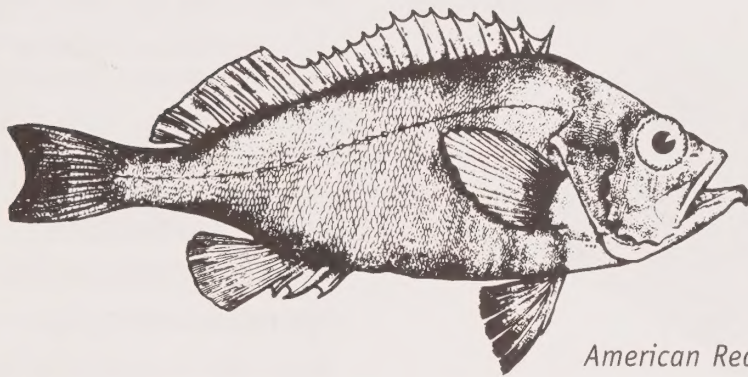
Redfish (Ocean Perch)

(*Sebastes* sp.)

There are three species of redfish that are fished commercially in the Canadian Atlantic but they are so similar that it is not possible to distinguish them easily. Redfish are also commonly known as ocean perch or rosefish and became commercially important in North America around 1935



Silver Hake



American Redfish

as a result of technological advances in filleting and fast freezing. Redfish frequent the deep waters of gullies and slopes of the continental shelf from southern Labrador to the Gulf of Maine, including the Flemish Cap and the Gulf of St. Lawrence.

Redfish are relatively small, spiny fish with an orange to flame-red body that contrasts vividly with their large black eyes. In the commercial catch, they usually range in length from 20 to 35 cm and their average weight is about 0.5 kg. Because redfish grow very slowly (about 2.5 cm per year), they are especially vulnerable to intensive fishing. The abundance of several stocks was low in the 1990s and fishing was prohibited in some areas.

Redfish are caught primarily by midwater trawls but may also be fished with bottom otter trawls.

Redfish are mostly sold in fresh and frozen form as ocean perch fillets.



Flatfish Species

Several commercially important species of small flatfish are found along Canada's east coast. American plaice, yellowtail, gray sole and winter flounder are marketed as flounder and sole. Collectively, they used to make up the most important Atlantic groundfish catch after cod.

Although the four species differ in size, appearance, distribution and abundance, their bodies are flat, and both eyes are on the same side of the head. Their underside is white, while their topside is pigmented, resembling the bottom over which they feed and live.

American Plaice (*Hippoglossoides platessoides*)

The most common of the four small flatfish species, plaice are also the most important from a commercial standpoint. They range from southern Labrador and the Grand Banks to Rhode Island in the United States.

Plaice are reddish to grayish-brown on the eyed side of the body, and white or bluish-white on the blind left side. They have a large mouth, an almost straight lateral line. The bulk of the catch is made up of plaice ranging from 31 to 45 cm in length and 0.3 to 1 kg in weight.

They are harvested in both inshore and offshore fisheries, mainly with otter trawls, although seine nets and longlines are also used.

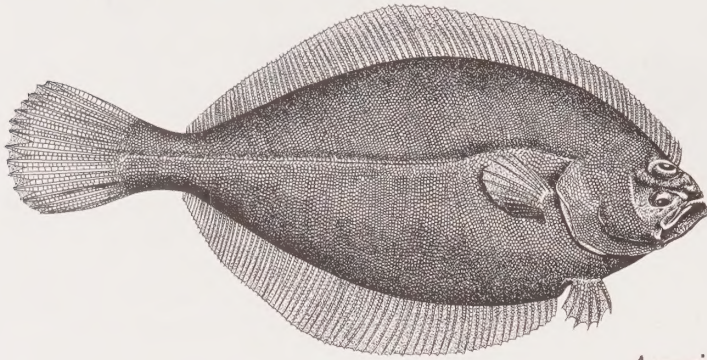
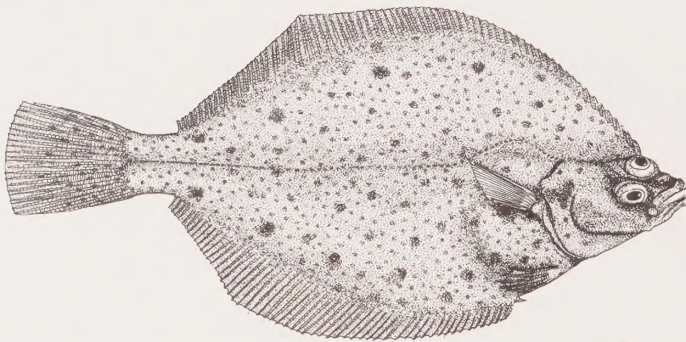
Plaice are marketed fresh or frozen, mainly in the filleted form.



Yellowtail Flounder (*Limanda ferruginea*)

Yellowtail flounder, commonly known as yellowtail or lemon sole, are found along the continental shelf from southern Labrador to Chesapeake Bay. They are brownish-olive on the eyed topside, with numerous rusty spots, and the tail is yellow. The mouth is relatively small and the lateral line is arched. Average length is 38 to 40 cm and average weight is about 0.5 to 0.6 kg.

Yellowtail are caught chiefly with otter trawls. They are marketed primarily as frozen fillets of flounder but are also available as fresh whole fish or fillets.

*American Plaice**Yellowtail Flounder*

Witch Flounder (*Glyptocephalus cynoglossus*)

Also commonly known as the gray sole, this species owes its witch-like appearance to a grayish-brown body trimmed with dark gray or black fins. The underside is grayish-white. The mouth is small and the lateral line is almost straight. Fish in commercial fisheries are usually between 33 and 50 cm and weigh between 0.3 and 1 kg.

Witch occur in the moderately deep waters of the Gulf of St. Lawrence and off the coast of Newfoundland and Labrador where they are harvested with otter trawls and seine nets.

Witch are principally marketed as fresh or frozen fillets of sole.



Sometimes spotted or mottled, the eyed side varies from a muddy reddish-brown to almost black. The blind side is white and often tinged with yellow. Winter flounder have small mouths and seldom exceed 45 cm in length or 1.4 kg in weight.

Nearshore fishermen harvest them with handlines, spears and trapnets while inshore fishermen use otter trawls and tangle nets.

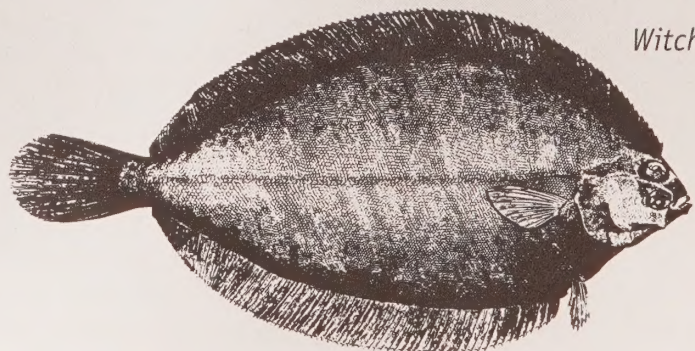
The winter flounder catch is marketed as fresh or frozen fillets of sole.



Turbot (Greenland Halibut) (*Reinhardtius hippoglossoides*)

Turbot, also known as Greenland halibut, are large flatfish more similar to the Atlantic halibut than the European turbot.

They are yellowish or grayish brown and, unlike other flatfish, the dark pigmentation is fairly uniform over the whole body, although the colouring is lighter on the blind side. The tail, like that of halibut, is forked, but the lateral line, unlike that of halibut, is straight rather than arched.

*Witch Flounder*

The average weight in the commercial catch ranges from about 0.5 to 4.5 kg.

Turbot are found from Arctic waters south to Georges Bank. They occur in deep waters and the fishery is confined, for the most part, to the deep bays of Newfoundland, Labrador, Baffin Island and the Gulf of St. Lawrence.

Traditionally a line trawl fishery, gillnets are now being used to harvest these fish. Offshore catches are made by otter trawl.

The bulk of the turbot catch goes to market as fresh or frozen fillets.



Atlantic Halibut (*Hippoglossus hippoglossus*)

Atlantic halibut, giant members of the flatfish family, are prized table delicacies and command the highest price of any flatfish. However, total landings in the Canadian Atlantic fishery are well below those of any of the smaller flatfish commonly called flounders.

Residents of waters on both sides of the Atlantic, halibut range in the western Atlantic from Labrador southward to the Gulf of Maine and eastward to western Greenland. In Canadian waters, main areas of catch are the Nova Scotia Banks, the Grand Banks and the Gulf of St. Lawrence.

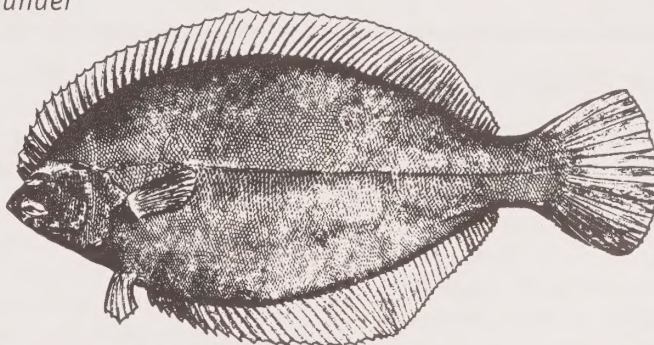
Halibut are readily distinguished from most other flatfish by their large mouth and forked tail. The upper side is greenish-brown to very dark brown with scattered blotches. The underside ranges from white in small fish to gray

or mottled gray-white, sometimes suffused with red, in the larger ones. Halibut can become very large and in the commercial catch their weight range is from 2.3 to over 56 kg.

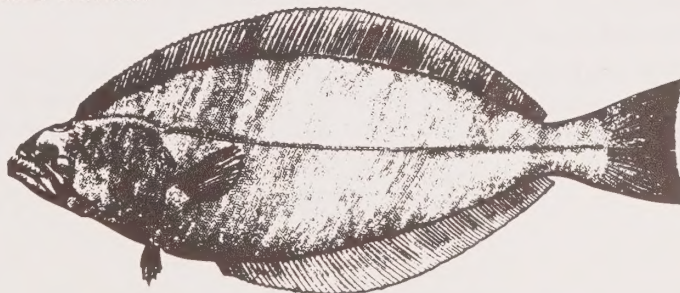
They are caught with longlines and otter trawls, and marketed fresh or frozen, usually in the form of steaks and fillets.



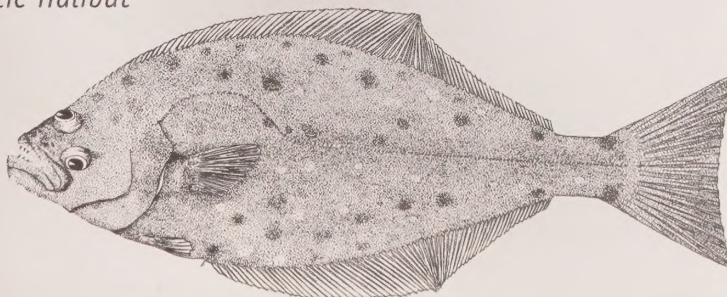
Winter Flounder



Greenland Halibut



Atlantic Halibut



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- Freshwater
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To which category does this species belong?

Further Reading

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Visit the following web sites:

East Coast of North America Strategic Assessment Project at:
<http://www-orca.nos.noaa.gov/projects/ecnasap/ecnasap.html>

Canadian Stock Assessment Secretariat (Fisheries and Oceans Canada) at:
<http://www.dfo-mpo.gc.ca/csas/>

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